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EXAMINER

ROE, JESSEE RANDALL

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MELVIN ROBERT JACKSON, BERNARD PATRICK
BEWLAY, JUDSON SLOAN MARTE, PAZHAYANNUR
RAMANATHAN SUBRAMANIAN, JI-CHENG ZHAO,
and ANN MELINDA RITTER

Appeal 2010-005355
Application 10/671,851
Technology Center 1700

Before BRADLEY R. GARRIS, CHARLES F. WARREN, and
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1, 3, 5-21, 23, 25, and 27-43. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM-IN-PART.

Appellants claim a method for forming a refractory metal-intermetallic composite comprising the steps of providing a first powder comprising a refractory metal such as niobium, providing a second powder comprising a silicide precursor such as silicon, blending these powders to form a powder blend, consolidating and mechanically deforming the powder blend at a first temperature, and reacting the powder blend at a second temperature higher than the first temperature to form the metal phase and the intermetallic phase of the refractory metal-intermetallic composite (claims 1 and 23). In one embodiment of this method, the refractory metal-intermetallic composite has a graded composition (claims 18 and 40).

Representative claims 1 and 18 read as follows:

1. A method for forming a refractory metal-intermetallic composite, the method comprising:

providing a first powder comprising a refractory metal suitable for forming a metal phase;

providing a second powder comprising a silicide precursor suitable for forming an intermetallic phase;

blending the first powder and the second powder to form a powder blend;

consolidating and mechanically deforming the powder blend at a first temperature; and

reacting the powder blend at a second temperature to form the metal phase and the intermetallic phase of the refractory metal-intermetallic composite, wherein the second temperature is higher than the first temperature; and

wherein the first powder comprises at least one of niobium, titanium, and molybdenum; and the second powder comprises at least one of silicon, germanium, and boron.

18. The method of claim 1, wherein the refractory metal-intermetallic

composite has a graded composition.

The references set forth below are relied upon by the Examiner as evidence of obviousness:

Svedberg	4,836,849	Jun. 06, 1989
Jackson	6,428,910 B1	Aug. 06, 2002
Xu	6,692,586 B2	Feb. 17, 2004

Under 35 U.S.C. § 103(a), the Examiner rejects:

claims 1, 3, 5-9, 12-17, 23, 25, and 27-39 as unpatentable over Xu;

claims 10, 11, 19-21, 32, 33, and 41-43 as unpatentable over Xu in view of Svedberg; and

claims 18-20 and 40-42 as unpatentable over Xu in view of Jackson.

For the reasons expressed in the Answer and below, we will sustain these rejections of the appealed claims except for the rejection of claims 18 and 40.

The Rejection based on Xu

Appellants do not contest with any reasonable specificity the Examiner's findings that Xu teaches or would have suggested providing and blending powders such as niobium and silicon in order to form a braze alloy composition which may be pressed and/or formed at room temperature conditions into foils, rods, and the like (Ans. 3-4, 8-10). It follows that Appellants likewise do not contest the Examiner's determination that Xu teaches or would have suggested a method which satisfies the providing, blending, and consolidating/mechanically deforming steps of claim 1.¹

¹ We acknowledge Appellants' statement that, "[w]hile the composition of Xu may contain some elements which happen to be similar to some elements of the present invention, the overall braze material has nothing to do with the present invention" (Br. 5). However, this unembellished statement fails to meaningfully address the

Appellants argue that Xu "fails to suggest the higher-temperature reaction step recited in claim 1, wherein the metal-intermetallic phases are formed" (Br. 5).

The Examiner responds to this argument by explaining that the claimed reacting step would necessarily be practiced during use of Xu's braze composition since the same ingredients (e.g., niobium and silicon) would be subjected to the same temperatures (e.g., about 1100°C (*cf.*, Xu's para. bridging cols. 8-9 *with* appealed claim 16)) (Ans. 9). Significantly, the Examiner's explanation has not been contested by Appellants in the record of this appeal (i.e., no Reply Brief has been filed).

Appellants further argue that, "while Xu generally describes heating steps, the specific heating limitations in claims 12-17 are never suggested by the reference" (Br. 6).²

This argument is refuted by the Examiner's previously discussed findings that Xu's pressing/forming step may be practiced at room temperature thereby satisfying the first temperature limitation of, for example, claim 13 and that Xu's brazing operation includes a temperature of about 1100°C thereby satisfying the second temperature limitation of, for example, claim 16. Again, Appellants have not contested these findings in the appeal record.

For the reasons stated above and in the Answer, we sustain the § 103 rejection of claims 1, 3, 5-9, 12-17, 23, 25, and 27-39 as unpatentable over Xu.

issue before us, namely, whether the argued claims on appeal define a method which patentability distinguishes over the method of Xu.

² Claims 12-17 are the only dependent claims in this rejection which have been separately argued by Appellants. Accordingly, the remaining dependent claims under this rejection will stand or fall with independent claim 1 and independent claim 23 (which is identical to representative claim 1).

The Rejection based on Xu and Svedberg

Notwithstanding an acknowledgment that "the techniques involved in the consolidation/deformation steps of these claims [i.e., rejected claims 10, 11, 32, and 33] are known in the art" (Br. 6), Appellants argue that, "[w]hile Svedberg contains some steps which are similar to those of the present invention, the reference fails to describe the consolidation-deformation/reaction steps for a refractory-silicide composition, as in the present invention" (*id.* at para. bridging 6-7, emphasis in original).

As correctly indicated by the Examiner, Appellants' argument is unpersuasive because it attacks Svedberg individually rather than the combination of Xu and Svedberg, and one cannot show nonobviousness by attacking a reference individually where the rejection is based on a combination of references (Ans. para. bridging 10-11). *See In re Merck & Co.*, 800 F.2d 1091, 1097-98 (Fed. Cir. 1986) and *In re Keller*, 642 F.2d 413, 425-26 (CCPA 1981) (cited by the Examiner at Ans. para. bridging 10-11). As a consequence, the record before us contains no specific argument by Appellants of error in the seemingly reasonable conclusion that it would have been obvious to practice the pressing/forming step of Xu with the consolidating and mechanically deforming techniques disclosed by Svedberg and defined by claims 10, 11, 32, and 33 (which Appellants acknowledge are known in the art).

The other claims under rejection which are claims 19-21 and 41-43 have not been separately argued by Appellants with any reasonable specificity (*see* Br. 8).

Accordingly, we also sustain the § 103 rejection of claims 10, 11, 19-21, 32, 33, and 41-43 as unpatentable over Xu in view of Svedberg.

The Rejection based on Xu and Jackson

Concerning this rejection, the only reasonably specific argument advanced by Appellants relates to the "graded composition" limitation of claims 18 and 40 (Br. 7-8). Specifically, Appellants argue that Jackson contains no teaching or suggestion of a refractory metal-intermetallic composite having a graded composition in the context of the method steps required by independent claims 1 and 23 (*id.*).

As background, this argument is directed to the Examiner's conclusion that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of forming a composition, as disclosed by Xu . . . , by applying a graded surface layer, as disclosed by Jackson . . . , in order to provide oxidation resistance throughout [the] turbine operation, as disclosed by Xu

(Ans. 7).

We do not agree with the Examiner that Appellants' argument is limited to an attack of the Jackson reference individually (*id.* at para. bridging 11-12). In our view, this argument raises the issue of how the graded composition feature of Jackson would have been combined with the method steps disclosed by Xu and required by independent claims 1 and 23. When considered from this perspective, Appellants' argument has merit.

On this record, the Examiner has articulated no reasoning with some rational underpinning to support the above conclusion that it would have been obvious to somehow modify Xu's method for making and using a braze composition "by applying a graded surface layer, as disclosed by Jackson" (*id.* at 7). *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal

conclusion of obviousness."), quoted with approval in *KSR Int'l. Co. v. Teleflex Inc.*, 550 U.S. 398, 417-18 (2007). In other words, the Examiner has made a conclusory statement that it would have been obvious to modify Xu's method by applying Jackson's graded surface layer but has failed to provide any rational and specific explanation as to how such a modification would be achieved.

For this reason, we cannot sustain the § 103 rejection of claims 18 and 40 as unpatentable over Xu in view of Jackson.

However, we sustain the corresponding rejection of claims 19, 20, 41, and 42 since these claims do not require the "graded composition" limitation discussed above and have not been separately argued by Appellants.

Conclusion

In summary, we have sustained the § 103 rejections of claims 1, 3, 5-17, 19-21, 23, 25, 27-39, and 41-43, but we have not sustained the § 103 rejection of claims 18 and 40.

The decision of the Examiner is affirmed-in-part.

AFFIRMED-IN-PART